

The RadioWave-Cancer Connection

If radiowaves have been linked with cancer, should we allow our governments 'licence to kill' by continuing to control and overload the electromagnetic spectrum?

This is an article on electromagnetic fields and the potential health hazards associated with exposure to them. Author Dr Marjorie Lundquist, based in Milwaukee, Wisconsin, is a Ph.D. physicist and a certified industrial hygienist who has studied this issue for a number of years. Industrial hygiene is a 70-year-old profession devoted to the prevention of diseases resulting from exposure to hazardous environmental agents—originally, agents in the workplace. Although preventing disease in people exposed to electromagnetic fields is an industrial hygiene problem, no qualified industrial hygiene professional has ever been asked to solve this problem! Indeed, of the many organisations sponsoring evaluation of the data and reviews of the scientific literature, none has ever commissioned a qualified industrial hygiene professional to perform such a task! With Dr Lundquist's article, this is the first time that a specialist in prevention of environmental disease has addressed this issue. — ES

The United States began to be subjected to artificially-generated electromagnetic radiation on a large scale in the 1920s when commercial radio broadcasting began. The very first such station licensed in this country was KDKA in Pittsburgh, Pennsylvania. Westinghouse obtained the licence on 27 October 1920 and still operates the station today.

Every government licenses broadcast transmitters. The growth of commercial radio broadcasting can be traced simply by looking at the record of licences granted in the USA (originally by the US Department of Commerce, now by the US Federal Communications Commission). Commercial radio broadcasting grew explosively in the United States during the 1920s. By the end of 1921, the Department of Commerce had issued 32 broadcast licences. A year later, the number of applicants had exceeded 600. A whole new industry had been spawned. By 1923 there were 200 manufacturers of radio receivers in the United States, and 5,000 component-makers!

If one looks at the health data for the whole USA during this same period, one sees a curious jump in the nationwide incidence of childhood brain cancer that appears, for white children, to track rather closely the rise in commercial radio broadcasting. For non-white children there is a similar rise in childhood brain cancer—a rise of the same magnitude—but it is considerably delayed in time compared to the curve for white children.

Census data provide a clue that could explain the delayed rise in non-white children. In 1920 the overwhelming majority of the non-white population lived in *rural* areas. By contrast, a majority of the white population lived in *urban* areas even *before* the beginning of the 20th century!

The rise in childhood brain cancer in non-white children closely coincides with the rural-to-urban population shift of the non-white population which took place in the middle of the 20th century. The childhood brain cancer data therefore seem to indicate that a new hazardous agent had established itself in the urban—but not the rural—environment of the United States by 1930. This hazardous agent was able to affect large numbers of white children without delay because they were already present in the urban environment; but non-white children were not initially affected because they were concentrated in rural areas. However, as the shift of the non-white population from rural to urban areas took place, non-white children began to be affected, also; and when both populations were predominantly urban, the children of both population groups were thereafter affected in the same manner.

© 1995 by Marjorie Lundquist,
Ph.D., C.I.H.

Reprinted with permission from
Extraordinary Science (Jan/Feb/Mar 1995)
PO Box 5636
Colorado Springs, CO 80931, USA
Ph: (719) 475 0918, Fax: (719) 475 0582

Where were the transmitters of commercial radio broadcasting stations located? In urban areas, of course, because that is where the majority of radio listeners were concentrated! When did commercial broadcast radio begin? In 1920. By what date did every major US city have at least one commercial radio station? Probably well before 1925. The early radio stations produced an amplitude-modulated signal—that is, they were AM stations. Thus, the localised electromagnetic fields surrounding commercial radio station transmitters are a very good candidate indeed for the mysterious urban hazardous agent that began elevating the rate of childhood brain cancer in the United States over 60 years ago.

Just two years ago, the news media trumpeted the fact that some users of the handheld cellular telephones with the transmitter in the handset were developing brain cancer behind the ear, on the same side of the head where the phone was typically positioned, at exactly the spot where brain tissue would be irradiated by the transmitter of the cellular phone. This experience is very similar to that of the law-enforcement officers who developed cancer where their microwave-emitting traffic radar guns had irradiated their bodies for long periods of time.

All three sets of data—the experience of law-enforcement officers with traffic radar guns, of cellular telephone users, and the data on childhood brain cancer since 1920—seem to indicate that *being in the near field of a transmitter of radio frequency radiation, including microwave radiation, for long periods of time is hazardous to human health* and may result in the development of some form of cancer!

When one is in the near field of a source, one is exposed to the localised field. For those readers who may be having some difficulty with the concepts of localised and radiated fields, and who may be confusing them with near and far fields, let me draw an analogy with the seashore. At the beach, there are waves that push

water up onto the beach; then the water runs back down into the ocean. Water continually surges back and forth at the shoreline through wave action. Electromagnetic power in the localised field also surges back and forth in a similar manner.

At the seashore there may also be an undertow that carries objects caught in it straight out to sea. This is similar to the radiated electromagnetic field which breaks away from the source and carries a signal away forever.

The water surging back and forth by wave action at the beach is not normally dangerous, but the undertow is. With electromagnetic fields, the reverse seems to be true: the radiated field that carries electromagnetic power away may not be hazardous, but the localised field where electromagnetic power simply surges back and forth *is* hazardous.

Could the radiated electromagnetic wave from broadcast transmitters also be hazardous? The answer is unclear. At present, there is no data indicating that the radiated electromagnetic wave from broadcast sources poses any cancer hazard, although, if the station were sufficiently high-powered, such a hazard might very well exist. But the available evidence points only to the localised field near a transmitter as being hazardous.

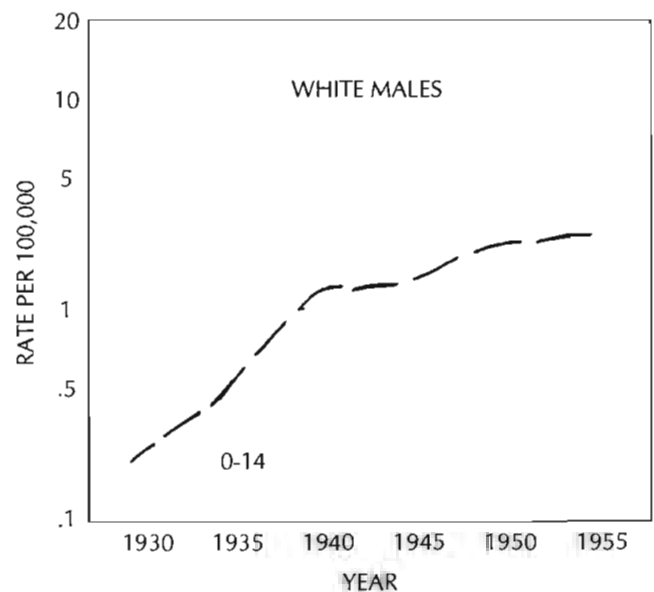
Of course, the temporal coincidence between the development of commercial broadcast radio in the early 1920s and the rather sudden increase in childhood brain cancer incidence thereafter does not *prove* that the electromagnetic fields around radio transmitters caused the observed rise in childhood brain cancer. But timing can be used to *rule out* other possible candidates. For example, it is most unlikely that electric power-lines could have caused the observed rise in childhood brain cancer because major American cities such as New York were electrified *before* the beginning of the twentieth century! It seems unlikely that electricity was initially innocuous, remained so for decades and then suddenly became harmful in the 1920s!

...the localised electromagnetic fields surrounding commercial radio station transmitters are a very good candidate indeed for the mysterious urban hazardous agent that began elevating the rate of childhood brain cancer in the United States over 60 years ago.

Historical trend in death rates from cancer of the brain and other parts of the nervous system in white male children (0 to 14 years of age) in the USA from 1930 to 1955. Notice the rapid increase in the decade prior to 1940. White female children exhibit a very similar curve (not shown).

The rapid rise in brain cancer death rate for white children follows by about 10 years the rapid growth of commercial radio broadcasting during the 1920s. These transmitters, and the majority of the white population, were located in urban areas. Similar death-rate curves for non-white children (not shown) display a rise that is delayed by about 15 years, compared to the curves for white children; the sharp rise coincides with the rural-to-urban shift of this population.

Presumably an agent that entered most US urban environments not long before 1930 is responsible for the striking rise in childhood brain cancer death rates that took place between 1930 and 1955.



Two factors make broadcast sources different from other sources of electromagnetic fields. One is that they use the electromagnetic spectrum, which in the USA legally belongs to the public, and they therefore must be licensed to transmit—that is, they must have government permission to emit a signal. Supposedly the government is acting in the public interest when a licence is issued, allowing a transmitter to go 'on the air'. Presumably the government would withhold the licence if the transmitter were unsafe.

The other difference is that *everybody* in the vicinity of the transmitter is exposed to the electromagnetic field it generates, but only those individuals who are listening to radios or TV sets tuned to the broadcasting station are receiving a benefit from the transmission. Therefore, this is a situation where *everyone* in a given geographic area is exposed in order that a *few* may benefit.

If the transmission is of public value—police radio transmissions or an emergency announcement warning of an approaching tornado, hurricane or tsunami—it is reasonable to presume that *everyone* benefits from the transmission. But much of what is broadcast today over commercial TV and radio is purely entertainment. What are the ethics of amusing some people at the expense of other people's health—all so that some third party may profit?

If there truly is a serious hazard to the public health associated with proximity to broadcast transmitters—and at present there is no conclusive proof of this, although there is strongly suggestive evidence over a range of frequencies—then the principles that govern the licensing of broadcast transmitters need to be scrutinised very carefully and possibly revised.

Up until now, the electromagnetic spectrum has been regarded as a useful economic resource. The assumption has been that unused spectrum is a waste of resources, like land that is not being cultivated to grow crops, or money that is stuffed under a mattress instead of earning interest in a bank. Therefore the federal government has felt it to be in the public interest to encourage the use of the electromagnetic spectrum, and has established its policies accordingly.

In the spring of 1994, the US Congress was considering legislation to transfer unused spectrum from the federal government to the private sector—and Rep. Ed Markey of Massachusetts, who is the Chairman of the Subcommittee on Telecommunications and Finance of the House Energy and Commerce Committee, was leading the fight! The rapid growth in the use of cellular telephones and mobile radio is bringing in revenue to the government (in the form of licence fees) and also stimulating the economy, so the government is currently *encouraging* expanded use of the electromagnetic spectrum.

But if the electromagnetic fields surround-

ing these transmitters constitute a public health hazard, it may be in the public interest, healthwise, for the electromagnetic spectrum to remain largely *unused*! This would call for a radical change in the way the US Federal Communications Commission operates, since it is the agency that licenses transmitters.

Right now, of course, the existence of a hazard to health from broadcast electromagnetic fields is uncertain. We strongly suspect there may be a cancer hazard, but we are not absolutely sure. What should we do under these conditions of uncertainty?

The logical thing to do is to *declare a moratorium* on licensing new broadcast stations or enlarging the operations of existing stations until this question is resolved. That way we can at least stop

the situation from getting worse. But right now our government is doing the *exact opposite*! It is opening up new portions of the electromagnetic spectrum and running lotteries to allocate the frequencies. It is allocating more spectrum to existing users.

We are in a situation right now that is similar to the 1920s: there is a rapid expansion of new broadcast sources in the radio-frequency region of the spectrum. If past history is any guide, we can expect the incidence of certain diseases (including cancers) in the population to increase in the near future as a consequence.

Supposedly our government serves the public. If you don't like what your government is doing on your behalf, express yourself! If you keep silent and do not let your government hear from you, it will just keep on doing what it is doing now: issuing licences to allow ever-increasing numbers of transmitters to operate—transmitters that may be slowly killing us by promoting the development of cancer and other chronic diseases. *Do we really want our government generating revenue by issuing licences to kill?*

∞

**Up until now, the
electromagnetic spectrum has
been regarded as a useful
economic resource.
The assumption has been that
unused spectrum is a waste of
resources.**

